

Valentina Žhuravlyova

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Valentina Zhuravlyova (b. 1933) received her training at a medical institute. She was probably prompted to try her hand at scientific fiction by almost fantastic possibilities offering in the field of medicine. The reader will particularly enjoy the bold flights of fancy in her scientific thinking. "The Astronaut" - 1960 - is one of her latest creations.

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I think I should begin by explaining in a few words the reason that brought me to the Central Astronautics Archives. My story might otherwise seem incomplete.

I am a spaceship physician with three astro-flights to my credit. My subject is psychiatry, or rather astropsychiatry, as it is called nowadays. The problem which I am working on at present first arose years back - in the 1970s. In those days flights to Mars took over a year, to Mercury just under two years. The engines only worked at take-off and touch-down. No astronomical observations were carried out in flight - sputnik - mounted observatories did that. So what could the crews do during those long months? Practically nothing. Forced inactivity led to tension, to nervous breakdowns and mental disorders. No amount of reading or listening in could make up for what the first spacemen lacked on board ship. For what they lacked was work - the hard, creative work to which they were accustomed. It was then that the principle of hobby-minded personnel selection was first advanced. The nature of the hobby, it was thought, was entirely immaterial, so long as it gave the astronaut something to do during the flight. And thus we got pilots who had a passion for mathematics, navigators keen on ancient manuscripts, poetry-writing engineers, etc.

There was a new entry in the astronaut's certificates, the famous item 12: "Interests other than professional." However, a break-through in rocket technology soon provided a new solution of the problem. Ion engines cut travel between planets to a few days. Item 12 was dropped.

Some years later, however, the problem reappeared with a vengeance.

Mankind had mastered interstellar travel. Yet though the speeds of ion rockets were eventually stepped up to suboptimal, journeys to even the nearest stars took up to twenty years ...

Item 12 was back in the flying certificates. In terms of actual rocket control crews were occupied no more than 0.001 per cent of flight time. TV faded away a few days after blast-off, radio lasted another month. And there were still years and years ahead ...

Rockets were manned by crews of six to eight in those days, not more. Tiny cabins and a 150-foot-long greenhouse were all the living-space they had. It is difficult for us who fly in interstellar liners to imagine how people in those days did without all these gyms, swimming pools, stereo-theatres and promenade galleries.

But I have digressed without beginning my story.

I don't know, haven't yet had time to find out who it was that designed the Archives buildings. But he was obviously a highly gifted architect. Gifted and daring. The buildings rise on the shore of a Siberian reservoir sea which was formed twenty years ago when they dammed the Ob. The main building stands on a high shore. I don't know how it was done, but it seems to soar above the water, a white pile looking like a schooner under a full press of sail.

Altogether there are fifteen people at the Archives. I have already met some of them. Most of them are here for short spells. An Australian writer is collecting material about the first interstellar flight. A scholar from Leningrad is studying the history of Mars. The diffident Indian is a famous sculptor. Two engineers - a tall strong-faced young man from Saratov and a small polite Japanese - are working jointly on some project. What kind I don't

know. The Japanese smiled politely when I asked him about it. 'Oh, it's an absolute trifle. Not at all worthy of your high attention.'

But I am digressing again, when I should really be beginning my story. I came to the Central Astronautics Archives to look into the history of the 12th item, which I needed for my research.

I spoke to the director the first evening. He's a man still in his prime, who all but lost the sight of both his eyes in a fuel-tank explosion aboard a rocket. He wears glasses of some special make - triple-lensed and blue-tinted. His eyes are not visible and it seems the man never smiles.

'Well,' he said, having heard me out, 'I think you should start with Sector 0-14. Oh, excuse me, that's a system we use here; it doesn't mean anything to you, of course. I meant the first' expedition to Barnard's Star.'

To my shame I knew next to nothing about that expedition.

'Your flights were in different directions,' he said with a shrug. 'Sirius, Procyon and 61 Cygni. And all your research so far has been on flights to those stars, hasn't it?'

I was surprised that he should know my record so well. 'The story of Alexei Zarubin, Commander of the expedition,' he went on, 'will provide the answers to some of your questions. You will have your materials in half an hour. Good luck.'

The eyes were invisible behind the blue-tinted lenses. His voice sounded sad.

The materials are on my desk. The paper is yellow with time; the ink on some of the documents (they wrote with ink in those days) has faded. But their meaning is not lost: there are infrared copies of all the documents. The paper has been laminated, and the sheets feel hard and

smooth.

Through the window I can see the sea. Its breakers roll in ponderously ; the water rustles up the shore like pages being turned ...

An expedition to Barnard's Star in those days was a hazardous adventure. The star is six light-years away from the Earth. The rocket was to fly half that distance under acceleration, and half under deceleration. The journey there and back was expected to take just under fourteen years.

For those aboard the rocket the time would be slowed down to only forty months. Not too long, it seemed. But the danger was that for thirty-eight out of those forty months the rocket engine was required to work at full blast.

The rocket had no fuel reserve - an unwarranted risk, one would think nowadays, but there was no alternative then. The ship could take no more than what the tightly calculated fuel tanks carried. Therefore any delay en route would be fatal.

I read the minutes of the selection committee. One after another the candidates for captain were turned down. And no wonder. The flight was to be exceptionally hard, the captain had to be an excellent engineer and combine a level head with reckless courage. Then suddenly everybody was unanimous.

I turn a page. The service record of Captain Alexei Zarubin.

A few minutes and three pages later I realise why Alexei Zarubin was selected captain of the Polus. In a truly amazing way the man combined 'ice and fire', the calm sagacity of a scholar and the fiery temperament of a fighter. That was probably why he had been entrusted

with the most daring ventures. He seemed to have the knack of overcoming insurmountable obstacles.

The committee selected the captain. As tradition decreed, the captain picked his own crew. But what Zarubin did could hardly be called picking. He just contacted five astronauts who had crewed with him before and asked whether they were prepared to undertake a risky flight. With him, yes, they said.

There are photographs of the crew in the materials. Black and white, two-dimensional. Captain Zarubin was twenty-six then, but he looks older in the photo. A rather full face with high cheek-bones, tightly-pressed lips, a prominent aquiline nose, wavy, soft-looking hair and unusual eyes – calm, seemingly lazy, but with a daredevil flicker lurking in the corners.

The others were even younger. Two engineers, a married couple, photographed together because they always flew together. The navigator with the meditative look of a musician. A stern-faced girl doctor and an astrophysicist, his eyes stubborn in a face patchy with deep burns, the results of a crash landing he had made with the captain on Dione, a satellite of Saturn.

An expedition to Barnard's Star in those days was a hazardous adventure. Now for item 12. I thumb the pages and see the pictures have told the truth. The navigator is a musician and composer. The stern-faced girl is keen on microbiology, a serious subject. The astrophysicist is learning languages; he has already mastered five and now thinks of tackling Latin and Ancient Greek. The engineers are fond of chess, the new kind – with two white and two black queens and an 8i-square board.

The captain's hobby strikes an odd note. It's unusual, unique, I have never heard of anything like it. He's been

keen on oil-painting since he was a boy. That is understandable, for his mother was a professional painter. But the captain seldom takes up his brush, he's interested in something else. He yearns to rediscover the lost secrets of the medieval masters - the composition of their oils, the way they mixed and used

them. He carries out chemical research as he does everything he undertakes - with the devotion of a scholar and the ardour of an artist.

Six different people, six different personalities and backgrounds. It's the captain who welds them together. They love him, they trust him, they even imitate him. So all of them know how to be freezingly calm and recklessly risky.

The blast-off for Barnard's Star. The atom reactor works without a hitch, letting out an even, invisible stream of ions. The ship flies under acceleration. It is hard at first to work, even to move about. The girl doctor makes everybody stick to a fixed regimen. Gradually the astronauts settle down to the flight conditions. The greenhouse is assembled, then the radio-telescope. Normal life begins. Control of the reactor and other mechanisms takes up very little time. Everyone has to devote four hours a day to studies in his own field. The rest they spend as they think fit. The serious-minded girl is devouring monographs on microbiology. The navigator has composed a song which is quite a hit. The engineer couple sit for hours over the chess-board. The astrophysicist wades through Plutarch in the original.

There are brief entries in the ship's log: The flight is proceeding normally. The reactor and mechanisms operate faultlessly. Spirits are high. Then suddenly an anguished entry: Telecommunication has gone dead. The rocket is beyond reach now. Yesterday we watched the last telecast from the Earth. How hard it is to see one more link

severed! Days later two more lines: Have perfected the reception antenna of the radio. Hope to be able to carry on reception for another seven or eight days. And they were happy as could be when the radio actually worked for another twelve days.

Building up speed, the ship swept towards Barnard's Star. Months went by. The atom reactor worked with utmost precision. The fuel was consumed strictly as pre-computed, not an iota above.

The catastrophe came unannounced. One day, when they were over seven months out, the reactor's operating condition changed. A side reaction had sharply stepped up fuel consumption. There was a brief entry in the log that day: Have no idea what has caused the side reaction. They did not know in those distant days that infinitesimal admixtures in the atomic fuel could sometimes make all the difference between a controlled and uncontrolled reaction.

2

The sea grumbles outside the window. The wind has picked up and the breakers no longer rustle but hiss angrily as they pound the shore. A woman's laughter wafts in to me. But I mustn't let myself be distracted. I can almost see those six in the rocket. I know them - I can imagine what they were going through. I may be wrong in some details - what does it matter? But no, I am even right in those. I feel certain everything happened as I see it.

A brownish liquid boiled frothily in the retort. The brownish steam passed through a coil pipe into the condenser. The captain was peering at the dark-red powder in a test-tube. The door opened. The flame wavered and danced.

The captain turned his head. Framed in the doorway was the engineer.

He kept control of himself but his voice betrayed him. It was loud, unnaturally firm and altogether not his usual.

'Take the load off your feet, Nikolai,' the captain said and pushed a chair forward. 'I did those calculations yesterday with the same result.'

'Come on, sit down.'

'What shall we do?'

'Do?' The captain glanced at the wall clock. 'Fifty-five minutes to supper. Enough time to discuss it. Please let everybody know we'll be having a conference, will you.'

'Very well,' the engineer replied absently. 'I'll let them know. Yes, of course.'

He couldn't understand why the captain dawdled. The ship's speed was increasing with every passing second; some kind of decision was imperative and urgent.

'Look at this,' the captain said, passing him the test-tube. 'You might be interested. It's cinnabar. Makes a devilishly attractive oil. But tends to darken when exposed to light.'

He explained to the engineer at some length how he had managed to produce a light-resistant cinnabar. The engineer shook the test-tube impatiently. There was a clock empanelled above the desk, which the engineer couldn't help glancing at: half a minute, the speed was a mile- and-a-quarter per second greater, another minute, another two-and-a-half miles per second ...

'I'll be going,' he said finally. 'I must tell the others.'

Going down the steps he suddenly realized he was no longer counting the seconds or at all hurrying.

The captain shut the door tightly and put the test-tube casually back into the rack. He allowed himself a faint

smile. Panic is after all a chain reaction. Which all things extraneous tend to slow down, he thought as he went back to his chair. The humming of the reactor cooling system filled his ears. The engines were busy accelerating the Polus flight.

Ten minutes later the captain went down to the mess-room. The five astronauts rose in greeting. All of them were in astronaut's uniform, worn only on special occasions, and the captain realized there was no need for him to explain the situation.

'Well,' he said. 'It seems only I forgot to don the uniform.' Nobody smiled.

'Please be seated,' the captain said. 'A council of war. Well now, let the youngest begin, as is the custom. You, Lena. What do you think we should do?'

He turned to the girl. She solemnly said: 'I'm a doctor, Alexei Pavlovich. And the problem under discussion is strictly technological. I will give my opinion later, if I may.'

The captain nodded: 'As you like. You're the cleverest among us, Lena. And, as a woman, the shrewdest, too. I'll bet anything you like you've got an opinion ready.'

The girl said nothing. 'Well,' the captain went on, 'Lena will speak later. Your turn, Sergei.'

The astrophysicist spread his arms in a gesture of indecision. 'This isn't up my alley either. I've got nothing pat. But I do know there's enough fuel to last us all the way to Barnard's Star. So why should we turn back when we're only halfway out?'

'Why?' the captain repeated. 'Just because once we're there we won't be able to come back at all. But we can now, when we're only halfway out, as you say.'

'I see your point,' the astrophysicist said thoughtfully. 'But, you know, we might be able to return after all. Not

by ourselves, of course. By a relief rocket. They'll see we're not coming and they'll send one. Surely astronautics is developing.'

'So it is,' the captain smiled wryly. 'With the passage of time. So fly on? Is that it? Good. Now you, Georgi. If it's up your alley, of course.'

The navigator sprang up, pushing his chair aside. 'Sit down,' the captain said. 'Sit down and speak calmly. Don't jump.'

'There can be no question of returning!' the navigator almost shouted. 'We can only go forward. Forward in face of the impossible. Why, how can we even speak of returning? Didn't we know from the outset the expedition was hazardous? And here we are, ready to turn tail at the first difficulty. I say, forward and only forward!'

'Well,' the captain drawled. Forward in face of the impossible. Beautifully said. Well, what do the engineers think? You, Nina? And you, Nikolai?' Nikolai glanced at his wife; she nodded and he began. He spoke calmly as if thinking aloud: 'The purpose of our flight to Barnard's Star is exploration. But if we six make some discovery it won't in itself have any value. It will have that only if and when mankind learns about it. If we reach Barnard's Star and have no means of coming back, what earthly use will there be in our findings? Sergei says a relief rocket will come eventually. I, too, think that is feasible. But those who come will themselves have made all the discoveries. What shall we have accomplished? What shall we have contributed to man's knowledge? Actually we shall only have brought harm. Yes, I mean it. Back on the Earth they will be waiting for our return. And in vain. If we turn back now only a minimum of time will be wasted. A new expedition will immediately set out. In fact we ourselves

will. A few years may be lost, but then the data we've so far gathered will have been safely brought to the Earth. As things stand now there's no chance of that. So why go on? We two are against it. We must turn back. And now.'

A long silence descended. Then the girl asked: 'And what do you think, Captain?'

The captain smiled wistfully.

'I think the engineers are right. Beautiful words are still words. But the engineers appeal to common sense and calculation. We set out to discover. If we do not pass on our discoveries, they might as well not have been made. Nikolai is absolutely right ...'

Zarubin got up and ponderously paced the mess room. Walking was difficult. The 3G-load brought about by the rocket's acceleration impeded movement.

'The relief-rocket variant is out,' he went on. 'But there are still two possibilities. The first is to turn back to the Earth. The second, to fly on to Barnard's Star - and still return to the Earth. Return in spite of fuel shortage.'

'How?' asked Nikolai.

Zarubin went back to his chair, sat down and said: 'That I don't know. Not yet anyway. But there are another eleven months of flight ahead. If you decide we should turn back now, we will.'

'But if you will trust me to think up something in those eleven months that would pull us through, well then ... forward in face of the impossible! That is the way I see it, friends. What do you say? You, Lena?'

The girl screwed her eye at him.

'Like any man, you're very cunning. I'd bet you've already thought up something.' The captain laughed.

'You'd lose. I haven't thought up anything. But I will. I certainly will.'

'We believe in you,' Nikolai said. 'We do believe in you.' Then, after a pause, he added: 'Though, frankly, I don't quite see how anything could pull us through. There will be eighteen per cent of propellant on the Polus. Eighteen instead of fifty. But you said you'd think up something. So let's fly on. As Georgi says, forward in face of the impossible.'

The window shutters creak softly. The wind leafs through the pages, scours about the room, filling it with the damp smell of the sea. Smell is a wonderful thing. You don't have it on board ship. The conditions purify the air and keep up the required humidity and temperature. But conditioned air is as vapid as distilled water. All sorts of artificial smell devices have been tried, but with no success. The aroma of ordinary, earthly air is much too complex to imitate. Even now I smell the sea and the damp, autumn leaves, and, vaguely, some perfume, and sometimes, on a gust of wind, the earth. And wet paint, too.

The wind is leafing through the pages ... What could it be the captain counted on? When the Polus had reached Barnard's Star her fuel reserve would be down to only eighteen per cent. Eighteen instead of fifty ...

In the morning I ask the director whether I may see Zarubin's pictures. 'We'll have to go upstairs,' he says. 'But ... tell me. have you read it all?' He listens to my answer, nodding.

'I see. I thought so, too. Yes, the captain took upon himself a great responsibility ... Would you have believed in him?'

'Yes.'

'So would I.'

He is silent for quite a while, his lips quivering slightly. Then he gets up and goes through the motions of adjusting

his spectacles. 'Well, let's go.'

He limps. We walk slowly through the long corridors. 'You will read about it yet,' the director starts. 'Volume Two, starting from page one hundred, if I remember rightly. Zarubin wanted to unravel the secrets of the Italian Renaissance masters. You see, oil-painting deteriorated starting with the 18th century - I mean its technique. A lot was thought to have been lost beyond hope of recovery. The painters could no longer mix oils that were at once bright and stable. The brighter the oil, the quicker it darkened. Especially the blues. Well, Zarubin ... But you will see for yourself.'

The pictures hang in a narrow, sunlit gallery and the first thing that strikes me is that each is executed in one primary colour.

'These are studies,' says the director. 'To try out the technique, nothing more. This is "A Study in Blue".'

Flying side by side in a blue sky are two frail human figures, with strapped-on wings, a man and a woman. All is done in blue, and never have I seen such an infinity of shades. It is a night sky, raven black on the left horizon and a melting, midday blue in the opposite corner. The winged humans shimmer from the lightest blue to the deepest violet. The colours are brilliant, almost vibrant in some places, and subdued, transparent in others.

There are more pictures. 'A Study in Red': two suns above an imaginary planet, a chaos of chiaroscuro ranging from blood red to salmon pink. 'A Study in Brown': a fairy-tale forest.

The director is silent. I wait, looking at the blue-tinted, impenetrable glasses. 'Read further,' he says softly. 'Then I shall show you more pictures. Then you'll understand.'

I am reading as fast as I can. As fast as I can without

losing the thread ...

The Polus hurtled on toward Barnard's Star. The speed reached the maximum and the engines began to brake. Judging from the scant entries in the log everything was normal. No breakdowns, no sick aboard. Nor did anyone remind the captain of his pledge. And the captain was calm, confident and cheerful as always. He went on with his research and had done more studies.

What were his thoughts when he was alone in his cabin? Neither the ship's log, nor the navigator's diary give any answer. But here is an interesting document. The engineers' report. About the malfunctioning of the cooling system. Crisp, concise language bristling with technicalities. But between the lines I read, 'If you have changed your mind, friend, this is where you can turn back. With no loss of face ...' And the captain's verdict across it, 'We'll do repairs on a planet of Barnard's Star', which means, 'No, friends, I haven't changed my mind'.

After nineteen months of flight the ship reached her destination. The dim red star had only one planet, almost the size of the Earth, but completely icebound. The Polus tried to land. But the jet of ions melted the ice and the first attempt failed. The captain chose another site, again the ice melted. Only at the sixth attempt did they manage to strike rock floor under a thin sheath of ice.

From that day the entries in the log-book were done in red ink. That was how discoveries were traditionally recorded.

The planet was a dead world. Its atmosphere was almost pure oxygen but not a trace of animal or plant life was found. The thermometer read 58° F. below zero. A wretched planet, the navigator wrote in his diary, but what a star! Discoveries galore!

And it was indeed so. Even today, when our knowledge of the structure and evolution of stars is increasing by leaps and bounds, the discoveries made by the Polus expedition have retained much of their value. The study of the gaseous envelope of the red dwarfs of the Barnard's Star type is still a classic. The log-book ... The scientific report ... The astrophysicist's paper setting out a paradoxical hypothesis of star evolution ... And, at last, what I have been looking for - the captain's order for departure. Still it comes as a surprise, almost a shock. Unable to believe my eyes, I hastily turn the pages. An entry in the navigator's diary. I see it all.

One day Zarubin said: 'That's all. Prepare for departure.'

The crew of five stared silently at their captain. The wall clock ticked away ...

The five stared silently at the captain. And waited. 'Prepare for departure,' the captain repeated. 'You know we've only got eighteen per cent of propellant. But there is a way out. First of all we must reduce the rocket's weight. All the heavy electronic gear will have to go, except for the controllers.' He saw that the navigator wanted to say something and waved him to silence. 'We've got to do it. Also all the partitions in the empty tanks, and some of the greenhouse sections. But that's not all. Fuel consumption is particularly heavy during the first months of flight - due to low acceleration, as you know. Comfort will have to be dispensed with: the Polus will depart to full 12 G's instead of three.'

'Flight control is impossible under that load,' Nikolai demurred. 'The pilot will not be able -'

'I know,' the captain cut him. 'I know. For the first months control will be done from here, from this planet.'

One of us will stay behind to do it. Keep quiet! Remember - there's no other way out. It's got to be done. Now, listen to this. You two cannot stay behind because you expect a child. Yes, I know. You are a doctor, Lena, and your place is with the crew. Sergei's an astrophysicist and will also fly. Georgi is too excitable. That leaves me. Don't argue. Everything will be done as I say.'

I look through Zarubin's calculations. I am a doctor and out of my depth in the maze of mathematics. But one thing is immediately obvious: the calculations were done to absolutely no tolerance, as it were. The rocket was stripped to a bare minimum and the take-off G- load was pushed up to a crushing maximum. The bigger part of the greenhouse was left on the planet and that carved deep into the astronauts' rations. The emergency power supply system with its two micro-reactors was also dismantled. As was almost all electronic equipment. If something untoward happened en route the rocket would be unable to regain Barnard's Star. The risk is cubed, the navigator wrote in his diary. And below, But for the one who stays behind it's risk raised to the tenth, hundredth power ...

Zarubin would have to wait for fourteen years. To wait for the relief rocket. Fourteen years on an alien, icebound planet ...

More calculations. Power was the prime thing. It had to last out the ground control period and the fourteen long years after. And again no allowance for emergency.

A photo of the captain's quarters, made out of the greenhouse sections. The transparent walls permit a view of the two micro-reactors and miscellaneous electronic equipment. The ground control antenna is on the roof. All round lies an icy waste. Aloft Barnard's Star shines coldly in a grey, murky sky. It is four times bigger than the Sun

in diameter but little brighter than the Moon.

I turn over pages in the log-book hastily. My eye runs through it all the captain's parting advice, the arrangements for radio communicator in the first days of flight, the list of things the captain would need ... Then, suddenly, one word. Blast-off.

After that a few odd-looking lines as if scrawled by a child: lines uneven, letters angular, broken. That was 12 G's.

With difficulty I make out the words. The first entry: Everything's fine but for the cursed G-load. Vision heavily veiled ... Two days later: Accelerating as calculated. Can't walk, just crawl ... A week later: It's tough, very (crossed out) ... The reactor operates as calculated.

Then two blank pages follow, while on the third, smeared with ink, a diagonal entry: Ground control weakening. There's some obstacle in the beam's path. This (crossed out). This is it. And below, on the same page, in a firm hand: Ground control restored. The power indicator stands at four. The captain is giving away all the power he's got but we can't stop him. This means help won't reach him in time ...

I close the log-book. I can only think about Zarubin now. I imagine the fading of ground control came quite unexpected. Suddenly the indicator rang and ... The indicator was ringing shrilly. The needle went down, quivering. The power beam had met an obstacle and control was slipping rapidly.

The captain stood at the transparent wall. The dim sun was sinking behind the horizon. Brownish shadows sped across the icy waste. The wind drove snow dust, whipped it along, carried it aloft into the murky, reddish-grey sky. The indicator was ringing insistently. What little power was

getting through was not enough for control. Zarubin was looking at the setting Barnard's Star. Behind him lamps flashed wildly on the panel of the electronic navigator.

The purplish-red disc was rapidly sinking below the horizon. For a fleeting moment a myriad of scarlet pin-points flickered on as the last rays were refracted by the ground ice. Then there was darkness.

Zarubin went over to the instrument board, switched off the indicator's signal. The needle was not moving any longer. Zarubin turned the wheel of the power regulator. The greenhouse was filled with the drone of the motors of the cooling system. He went on turning the wheel until it would turn no more. Then he went to the other side of the board, removed the safety lock and gave the wheel two more full turns. The drone rose to a shrill, vibrant, earsplitting roar.

The captain shuffled back to the wall, sank down on the bench. His hands were shaking. He took out his handkerchief and dabbed his brow. Then he pressed his cheek against the cool glass.

It was wait now, wait till the new, super-powerful signals reached the rocket and bounced back. And he waited.

He waited, losing all awareness of time, while the micro-reactors roared away at bursting point and the cooling system motors shrieked and groaned. The flimsy walls shuddered.

The captain waited.

Finally something forced him up and over to the instrument board. The needle on the indicator was back to normal. There was enough power now to control the rocket. Zarubin smiled wanly, said, 'There,' and glanced at the consumption dial. The consumption was 140 times greater than the precomputed.

That night the captain did not sleep. He was compiling a new programme for the electronic navigator. All the side effects of the power failure had to be eliminated.

The wind whipped up seas of snow on the plain. A subdued aurora borealis glowed over the horizon.

The micro-reactors screeched as if run amok, pouring forth into space what had been carefully husbanded to last for fourteen years ... Having fed the programme into the electronic machine the captain made a tired round of his quarters. Stars shone high above the transparent roof. Somewhere out there the Polus was accelerating earthwards.

It is very late but I decided to call on the director nonetheless. I remember he has mentioned some other pictures by Zarubin.

The director is sitting up.

'I knew you would come,' he says, putting on his spectacles hastily.

'Let's go, it's next door.'

In the adjacent room lit up by fluorescent lamps hang two middle-sized pictures. The first thought that crosses my mind is that the director has made a mistake. Zarubin couldn't possibly have painted these. They have nothing in common with what I saw in the morning: no colour experiments, no fantastic subjects. They are two ordinary landscapes. A road and a tree in one, and the edge of a wood in the other.

'Yes, this is Zarubin,' the director says as if reading my thoughts. 'He stayed behind on the planet - as you already know, of course. Well, it was a desperate way out, but still, it offered them a chance. I say this as an astronaut - as a former astronaut,' the director adjusted his spectacles, then went on, 'But then Zarubin did what

- Well, you know about it. In four weeks he gave off the power stored for fourteen years. He restored ground control and brought the Polus back to her course. Well, when the rocket reached sub-optical speed, braking began at normal G-load, and the crew could take over. By that time there was next to no power in Zarubin's micro-reactors. Nor could anything be done about it ... That was when he started on these pictures. In them his love for life and the Earth ...'

A country road topping a rise. A mighty rugged oak tree by its side. It is done in the manner of Jules Dupre of the Barbizon school: sturdy, gnarled, full of life and vigour. The wind drives along small shaggy clouds. A boulder lies by the ditch, and it seems that only a moment ago a weary traveller has been sitting on it ... All the details are executed carefully, lovingly, with an amazingly rich colour and light shading.

The other picture was never finished. It's a wood in spring. Everything is soaked in air, light, warmth ... Wonderful golden hues ... Zarubin was a perfect colourist.

'I brought these pictures to the Earth,' the director says softly. 'You?'

'Yes.' His voice is wistful, almost apologetic.

'The materials you have been looking through have no end. That is part of other expeditions. When the Polus returned, a rescue expedition was immediately equipped and sent out. All that could shorten the flight was done. The crew agreed to fly under 6 G's. They got to the planet - and did not find the greenhouse. They took tremendous risks and returned empty-handed. Then - many years later - I was sent. We had a breakdown on the way. There,' he put a hand up to his spectacles. 'But we got through. And found the greenhouse and the pictures ...

And a note from the captain.'

'What was in it?'

'Just one line: "Forward in face of the impossible".'

We look silently at the pictures. It suddenly occurs to me that Zarubin painted them from memory. There was ice all round him, lit up by the evil reddish glow of Barnard's Star. And on his palette he was mixing warm, sunny colours ... In item 12 he could in all truth have written: 'Am interested in, passionately love the Earth, its life, its people.'

The deserted corridors of the Archives are still and quiet. The windows are open, the sea breeze stirs the heavy curtains. The breakers roll in in stubborn cadence. They seem to whisper: forward in face of the impossible. A pause, another wave and a whisper: Forward ... And another pause ... I want to reply to the waves: 'Yes, forward, only forward, always forward.'